DOBOT

OPERATION INSTRUCTION

MOOZ

DOBOT MOOZ

INDUSTRIAL GRADE TRANSFORMABLE METALLIC 3D PRINTER

Contents

Symbol Description

| Description	Note	Warning
Basic terms or reference information.	Important precaution: ignoring it may cause malfunction of the machine and the corresponding risk.	Important warning: rules must be strictly observed, otherwise it may cause machine breakdown and personal injury.

Note: Updated Firmwares, User Manuals, Softwares and Tutorial Videos will be uploaded to our official website www.dobot.cc constantly, please use them for better experience. Any support, please contact us: mooz@dobot.cc.

1 Fast Assembly

1.1 Install the Filament Support

Fix the filament support on the Z-axis with screws (M3 screw x2).
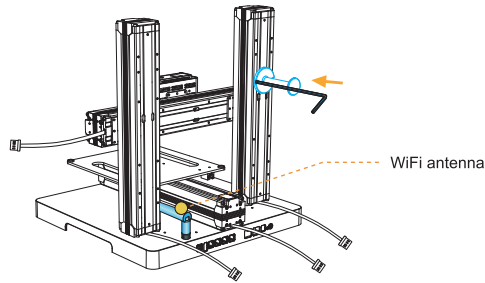
WiFi antenna

⚡ Warning: Please keep the WiFi antenna 90° bended, otherwise it may intefere the heated bed during operation!

1.2 Install the Heated Bed

Align the heated bed to the platform, run the black cable through hole on the platform, embed the round magnets into the ledges and connect the cable to the socket. As shown below.
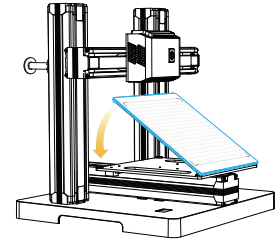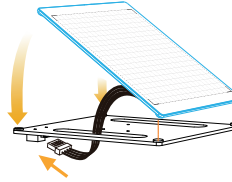
⚡ Warning: Heated bed (including the glass and magnets) is a fragile component, please operate with care! Do not mount and dismount it regularly during daily use.

1.3 Connect the Cables

⚡ Warning: 1. Wrong connection of cables may cause burnout of main control board! Hot-plug is strictly prohibited! Always make sure that all cables are plugged in place before power-on! Plugging of cables during power-on status will cause malfunction!
2. Improper use or replacement of the battery may result in hazard of explosion. Replace with the same or equivalent type only. Dispose of used batteries according to the instructions provided by the battery manufacturer.
3. This equipment is not suitable for use in locations where children are likely to be present.

⚠ Note: Please use the "1-to-2 adapter" to connect the Z-axis linear actuators to the main control board.

Before power on the machine, please follow the chart below and connect all modules to the main control board correctly.

USB			X	Y	Z		B	A	Power	

	1-to-2 adapter	
Z	←	Z-axis linear actuators
Y	←	Y-axis linear actuator
X	←	X-axis linear actuator
▤	←	LCD touch pad
A	8-core cable	LASER/3D print functional module
B	8-core cable	Heated bed

Z   Z
A
X
Y   B

6-core cable
1-to-2 adapter

1
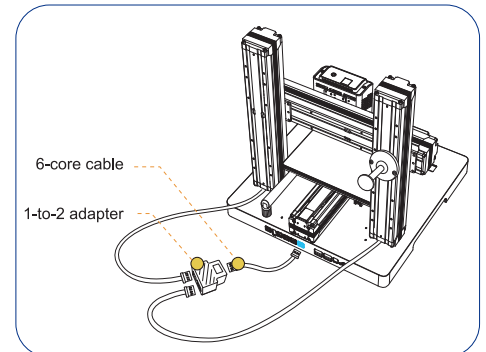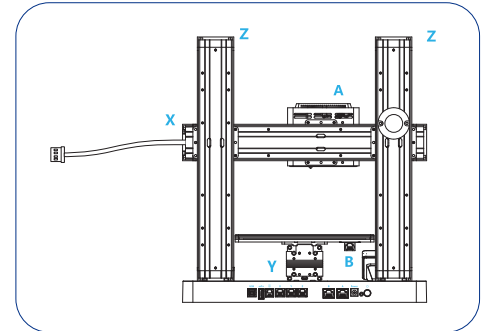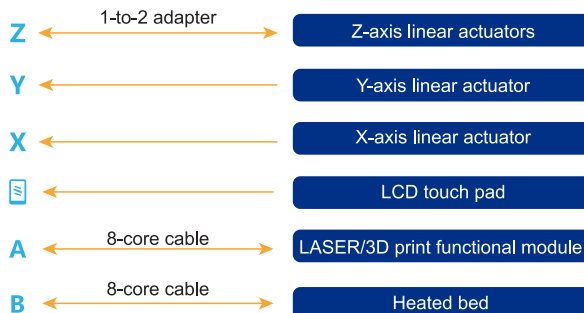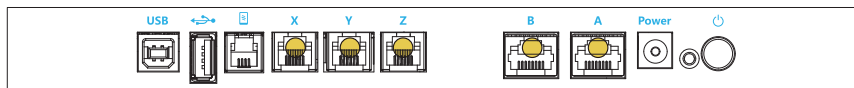
2 Operation Panel
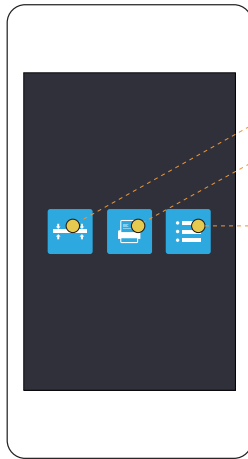
Entrance to 3-point leveling interface

Entrance to file directory interface

Entrance to control tools interface

Leveling

X: 20   Y: 20   Z: 20

−Z   +Z
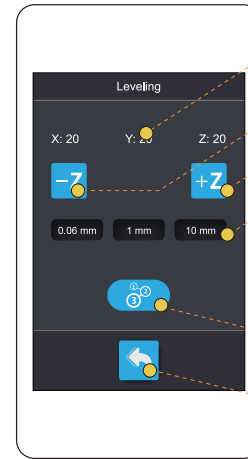
0.06 mm   1 mm   10 mm

Display current coordinates

Adjust nozzle downward

Adjust nozzle upward

Step distance switching buttons:
It should be used along with "-Z" and
 "+Z" buttons, indicating the moving
distance of Z axis when the button
is pressed (0.06mm/1mm/10mm)

3-point leveling mode initiate/Point recording button

Return

Files

文件名.gcode
.... .gcode

MicroSD card and U disk switching buttons

Display supported Gcode files in the current disk (microSD / U)

Page backward

File execution button: After selecting the file, press the button to start printing or engraving

Page forward

Return

File copy: Copy the selected file to the other disk

File delete: Delete the selected file

Control Tools
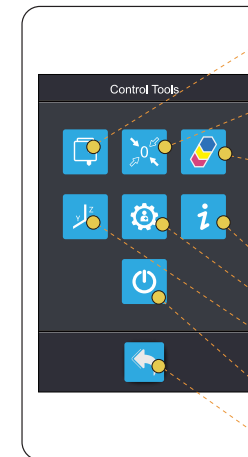
Entrance to functional module control interfaces

Entrance to zero point setting interface

Entrance to color mixing configuration interface
Not available for this model

Machine information

Entrance to other settings interface

Entrance to X/Y/Z motion control interface

Auto power-off

Return

2.5 3D Print Functional Module Control Interface

Function

LASER 3D CNC

T:25 C / 200 C

B:25 C / 60 C

Set nozzle preheat target temperature

Set heated bed preheat target temperature

Preheat nozzle: For testing whether the nozzle heating is normal, press again to stop heating

Preheat heated bed: For testing whether the bed heating is normal, press again to stop heating

Filament feed button: For installing filament and testing extrusion performance, provided that the nozzle is preheated to about 200ºC

Cooling fan switch: For detecting whether the cooling fan is normal

Filament retraction button: For removing filament, provided that the nozzle is preheated to about 200ºC

Return

2.6 Laser Engraving Functional Module Control Interface

Function

LASER 3D CNC

0

ON

Display current laser intensity
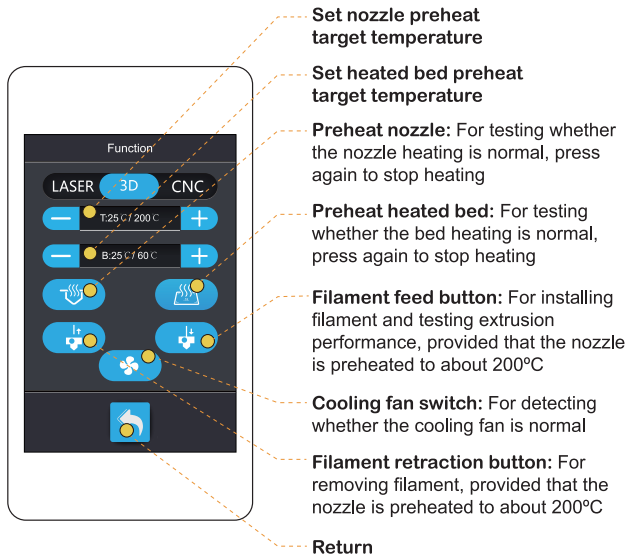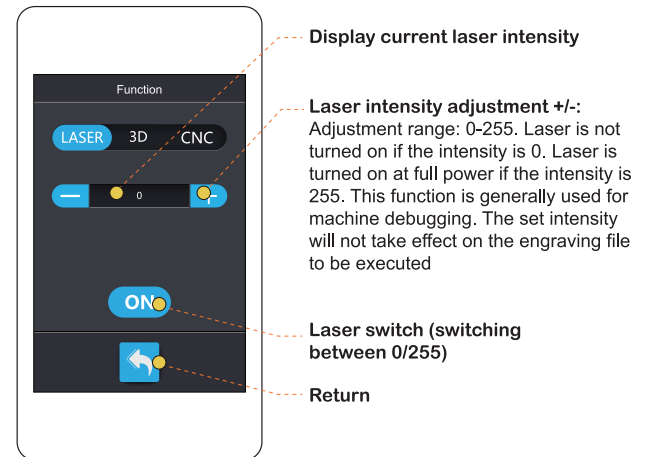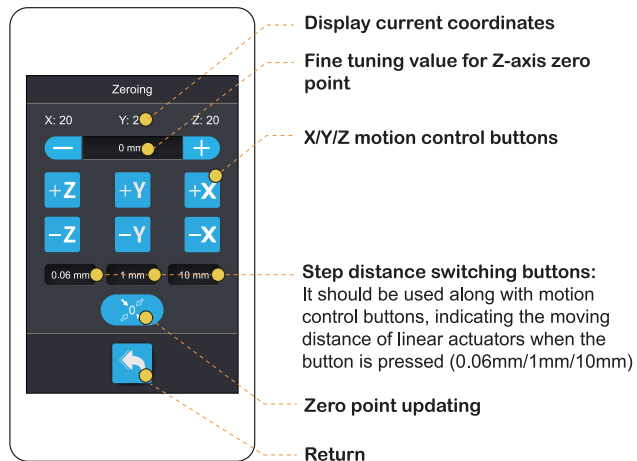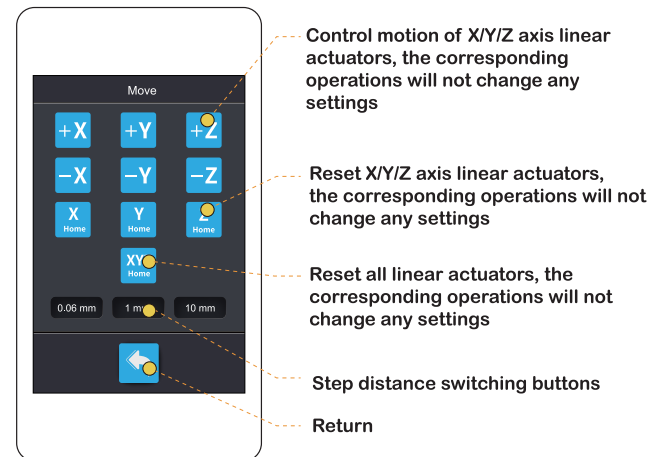
Laser intensity adjustment +/-: Adjustment range: 0-255. Laser is not turned on if the intensity is 0. Laser is turned on at full power if the intensity is 255. This function is generally used for machine debugging. The set intensity will not take effect on the engraving file to be executed

Laser switch (switching between 0/255)

Return

2.7 Zero Point Setting Interface

Zeroing

X: 20   Y: 2   Z: 20

0 mm

+Z +Y +X

−Z −Y −X

0.06 mm   1 mm   10 mm

Display current coordinates

Fine tuning value for Z-axis zero point

X/Y/Z motion control buttons

Step distance switching buttons: It should be used along with motion control buttons, indicating the moving distance of linear actuators when the button is pressed (0.06mm/1mm/10mm)

Zero point updating

Return

2.8 X/Y/Z Motion Control Interface

Move

+X +Y +Z

−X −Y −Z

X Home   Y Home   Z Home

XY Home

0.06 mm   1 m   10 mm

Control motion of X/Y/Z axis linear actuators, the corresponding operations will not change any settings

Reset X/Y/Z axis linear actuators, the corresponding operations will not change any settings

Reset all linear actuators, the corresponding operations will not change any settings

Step distance switching buttons

Return

Settings

Switch languages

Calibrate the LCD touch screen

Restore factory settings

WiFi

Return

Printing...

Model1.gcode

X: 20   Y: 20   Z: 2

00:06:20   62%

60℃/60℃   200/200℃

100%

Display execution progress of current file

Display time elapsed

Display current coordinates

Display current/target nozzle temperature

Display current/target heated bed temperature

Real-time working speed control buttons

Other operations:
Filament replacement, auto power-off

Abort the process

Pause/Continue the process

3D Printing

3.1 3-Point Leveling

Please follow the guide of the machine to record three different points to define a plane parallel to the heated bed, these three points must be recorded in order with nozzle in the areas shown in the drawing below, one in each. The calibration requires to be set only for the first use.
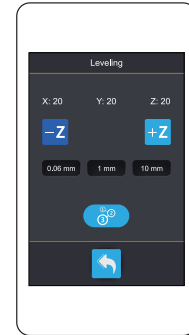
Operation steps:

Press the "Entrance to 3-point leveling interface" button
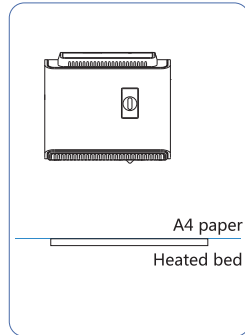
Place a piece of A4 paper on the heated bed

A4 paper

Heated bed

Press the "3-point leveling mode initiate/Point recording" button to enter 3-point leveling mode, and the nozzle will automatically go to a position right above Point ①

Press the "-Z" button to get the nozzle closer to the heated bed, and move the A4 paper back and forth at the same time. Stop just when the paper can slip with slight friction
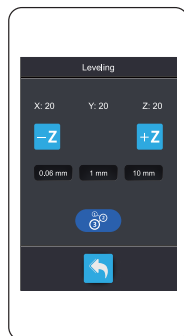
Press the "3-point leveling mode initiate/Point recording" button to record Point ①, the nozzle will automatically go to a position right above Point ② after successful recording
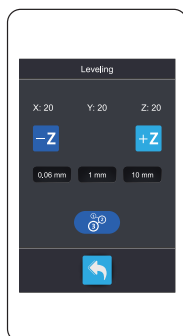
Do the same height adjusting and point recording steps to record Point ② and ③. After successful leveling, the machine will home again and exit 3-point leveling mode
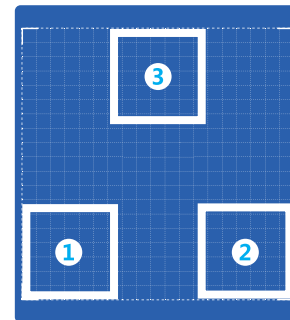
Note: 1. Please access to www.dobot.cc to check for upgraded firmwares!

2. 3-point leveling mode can only be entered with 3D printing head connected.

3. Only Z coordinates will be recorded, so all you need to do is adjusting the height with a piece of paper.
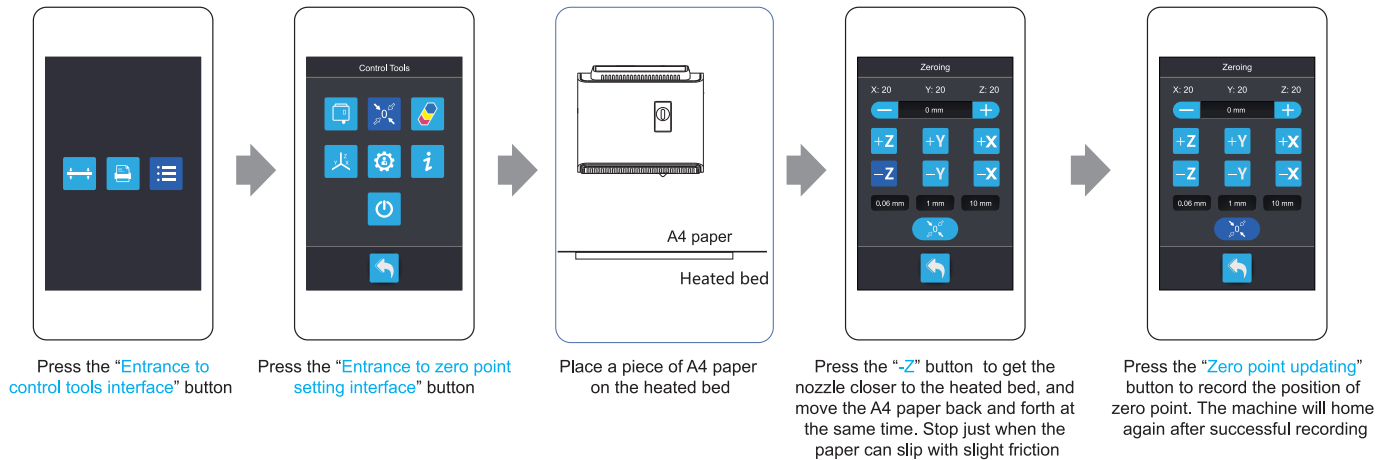
4. The recorded points will not be lost after power-off. But, once entering 3-point leveling mode, previously recorded points will be cleared automatically.

5. Friction status of the three points should be as uniform as possible. Pay attention when traveling the head downward, especially when the nozzle is getting too close to the bed. Even though the height detect protection will take effect and force the machine to go 0.06mm each press, the heated bed may also get burnt if you continuously move it downward without testing the height with a piece of paper.

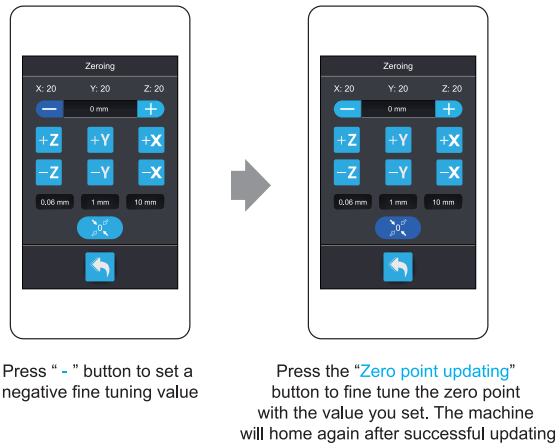6. A re-assembled machine should be re-levelled.

Zero point is the start point for the machine to print, which requires to be set only for the first use. Operation steps:

Press the "Entrance to control tools interface" button

Press the "Entrance to zero point setting interface" button

Place a piece of A4 paper on the heated bed

A4 paper

Heated bed

Press the "-Z" button to get the nozzle closer to the heated bed, and move the A4 paper back and forth at the same time. Stop just when the paper can slip with slight friction

Press the "Zero point updating" button to record the position of zero point. The machine will home again after successful recording

Fine tuning:

This function allows users to fine tune the zero of Z-axis according to bonding status of the first layer, in case the zero point is not satisfactory after standard setting procedures. For instance, if the zero point is too high and causing bonding failure of the first layer:

Press " - " button to set a negative fine tuning value

Press the "Zero point updating" button to fine tune the zero point with the value you set. The machine will home again after successful updating

⚠ Note:

1. For the 3D printing function, only the zero of Z-axis need to be set and recorded. Zeros of X-axis and Y-axis are using system default values and will not and cannot be changed.

2. Too high Z-axis zero position will lead to loose bonding at the bottom, causing the model falling off, and too low position will make it difficult to take off the model or even scratch the heated bed. Dedicated fine tuning is always required to obtain satisfactory first several layers. If the zero point is too high, please use a negative fine tuning value and use a positive fine tuning value if the zero point is too low.

3. Pay attention when moving the head downward, especially when the nozzle is getting too close to the bed. Even though the height detect protection will take effect and force the machine to go 0.06mm each press, the heated bed may also get burnt if you continuously move it downward without testing the height with a piece of paper.

4. The zero point will not be lost after power-off, so there's no need to reset it. However, the zero point may be deviated and needs to be reset after the machine is reassembled or the functional module is switched.

5. If your printer prints in the mid air, the zero point must be wrongly set. After correct zeroing and homing, the coordinate of Z should be about 195~200.

6. Please be prudent with the "Zero point updating" button, pressing it will change zero point of the machine. If the fine tuning value remains 0, the operation will record current height of the nozzle as zero point. If the fine tuning value is not 0, the operation will update zero point of Z-axis using fine tuning value you set.
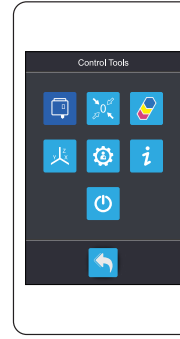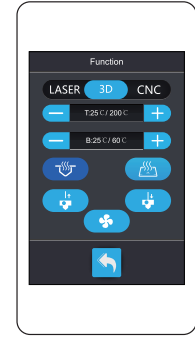
Operation steps:
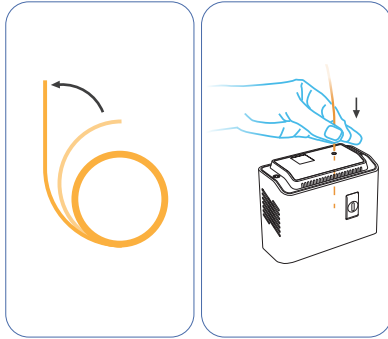
Straighten the filament manually, insert filament
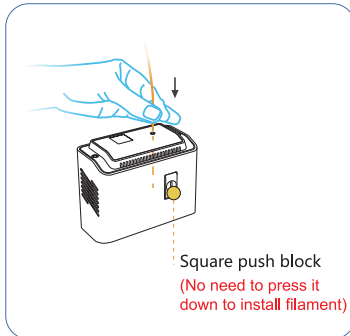to turn off the filament runout detection

Press the "Entrance to control
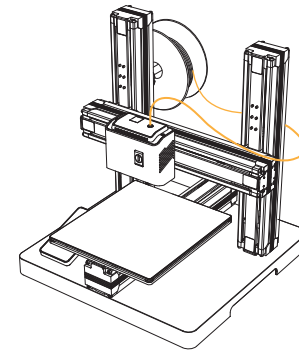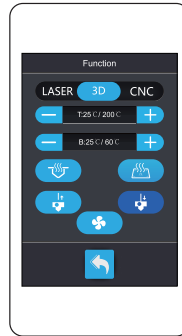tools interface" button

Press the "Entrance to functional
module control interfaces" button

Press the "Preheat nozzle"
button, and wait for the
temperature to reach about 200ºC

Square push block
(No need to press it
down to install filament)

Pressure the filament down firmly. At the same time,
press " " button until melted filament flows out of the nozzle.

Rearrange the filament after installing

⚠ Warning: 1. Please do not let the filament residue(snapped or about to use up) get "swallowed" by the extruder, otherwise it will jam the extruder!

2. Please do not try to install the filament by pressing down the square push block and insert the filament to the bottom of the nozzle, you may deflect the filament and break the fan blades.

⚠ Note: 1. After pressing " " button on the screen, you can feel the filament being "fed" into the extruder evenly. If you can not successfully install the filament according to the above method, please press down the square push block with one hand, and insert the filament down further for about 5mm to get it clamped by extruder gear, and then press " " button until melted filament flows out of the nozzle. In case the extruder or nozzle is jammed, please refer to Section 5.4 for maintenance.

2. Please keep the filament inserted and runout detection remains turned off, otherwise nozzle heating will be interrupted.

3. Method to remove the filament: Heat the nozzle to 200℃(For PLA), press the " " button twice to extrude some filament, and then press the " " button twice to retract it for some distance, stop nozzle heating and wait nozzle temperature drops down to 90℃ or lower, then press down the square push block and pull the filament out.
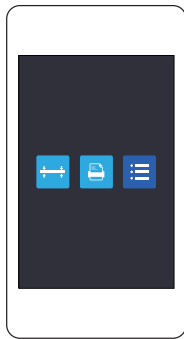
⚠️ Note: Please access to www.dobot.cc or APP store to download MOOZ mobile APP.
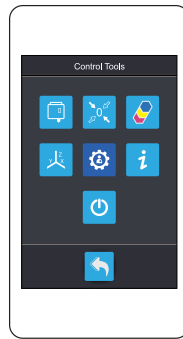
Approach 1: Use slicing software (Cura, for instance). Refer to Section 3.5.

Approach 2: Use our mobile APP to send Gcode files to the machine. Two modes are supported to build connection between the machine and your mobile, use the machine as hotspot is described here.
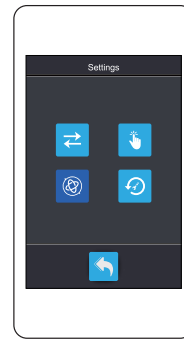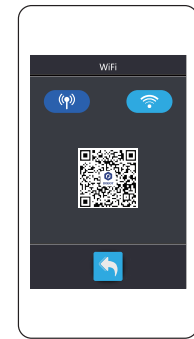
Open WiFi wireless hotspot:

Press the "Entrance to control tools interface" button
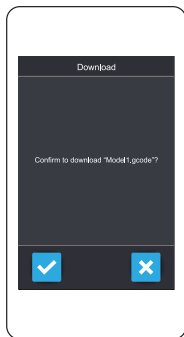
Press the "Other settings interface" button
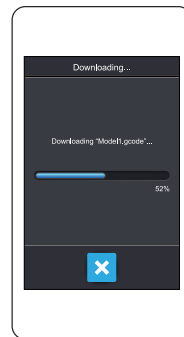
Press the "WiFi" button

Switch to "hotspot" mode, open the mobile APP and scan the QR code to establish connection between the machine and your mobile phone

Use the APP to choose a Gcode file and send it to the machine. Follow the prompts popped up on the touch pad to receive the file.

Confirm to receive

Wait for transmission finished
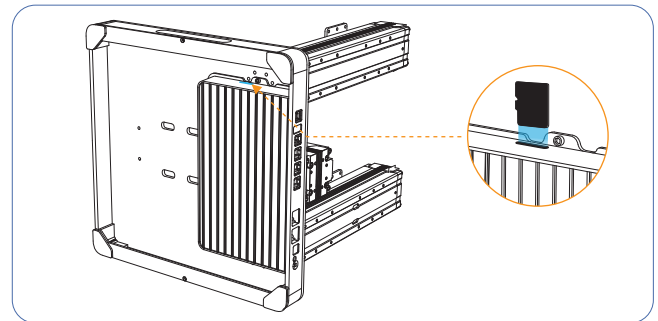
microSD card slot

⚠️ Note:

The main control board is designed with microSD card slot, which can be used to store Gcode files supported by the machine. MicroSD card is neither standardly equipped nor required. Format of microSD card you used shall be Fat32 with the capacity not greater than 32GB.

Description: The printer supports most third-party printing softwares, such as Cura, Repetier-Host, etc. Cura 3.1.0 is described here as an example.

3.5.1 Install the Slicing Software

Operation steps:

① Double-click to install the software:

Cura3.1.0.exe

② Select the installation directory. It is recommended to keep the default, click "Next":
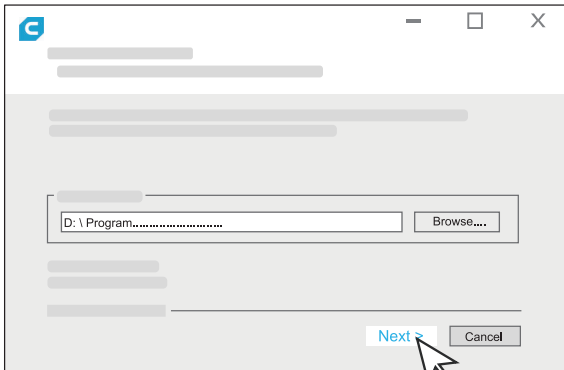
③ Select the features you need. It is recommended to keep the defaults, click "Install":

④ The window of installing arduino driver will pop up in the process of installation. Please follow the prompts to complete the installation.

3.5.2 Configuration for Initial Use

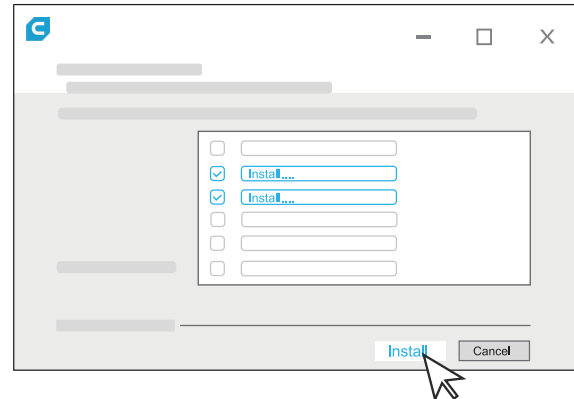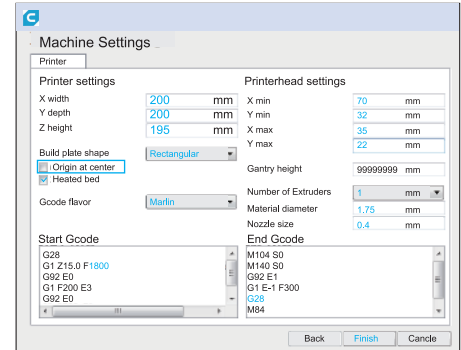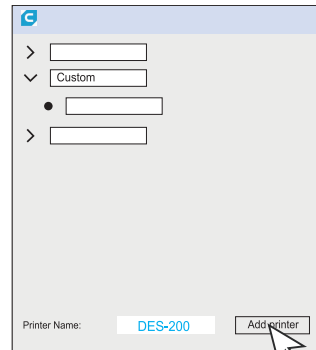Description: Please visit www.dobot.cc to download the related tutorial videos and softwares.

Operation steps: ① Run Cura 3.1.0 and go "Settings" > "Printer" > "Add Printer" > "Custom", name your printer "DES-200", and click "Add printer", diaolog of Machine Settings will popup ➩ ② Configure the machine
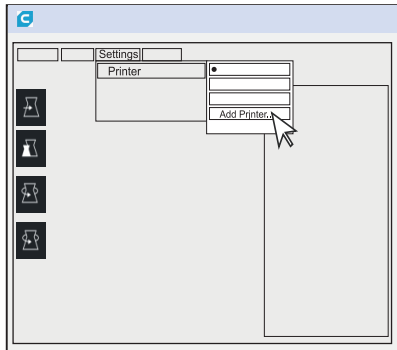
Note: Note: Origin of the printer is defaulted at left-bottom corner of the heated bed, so do not check the "Origin at center" box, otherwise the model will be printed outside of the heated bed.

3.5.3 Online Printing

Note: If the computer enters sleep mode during online printing, the printing process will be interrupted. Please check the power status of the computer before printing.

Online steps:

① Connect to the computer with USB cable, and power up the machine ➜ ② Restart Cura 3.1.0, and select the printer you added and configured in Section 3.5.2 ➜ ③ Go "File" > "Open File(s)..." and select the model you want to slice. Cura supports STL/OBJ /AMF format models
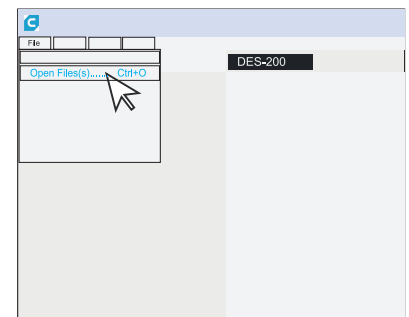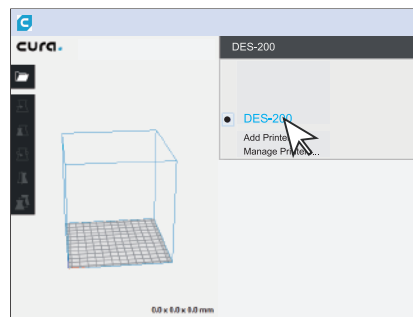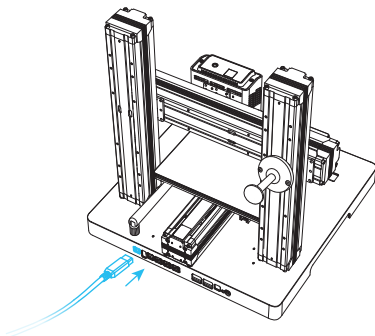
Profile the model:

① Adjust the model: left click on the model, four options " ", " ", " " and " " will appear on the left side of the interface, and you can adjust as needed.
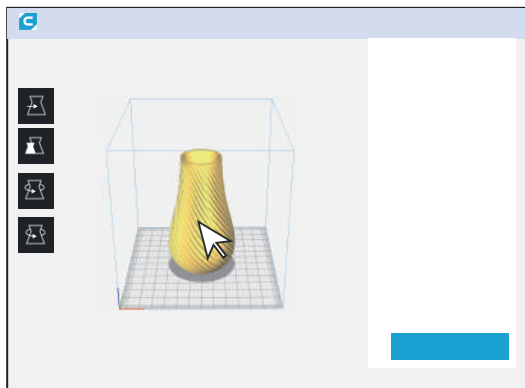
② View the details of the slice: click the drop-down list on the upper middle corner of the interface and select "Layer view" to view the details of the slice.
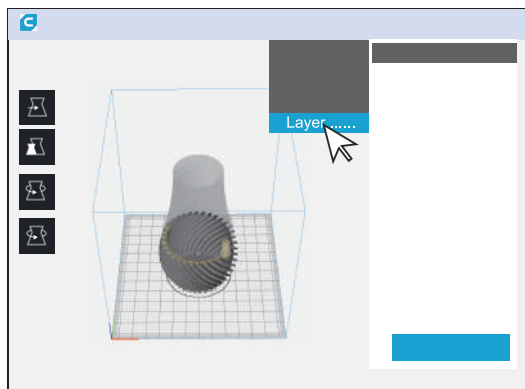
③ Click the drop-down list on the right bottom corner of the interface and select "Print via USB".
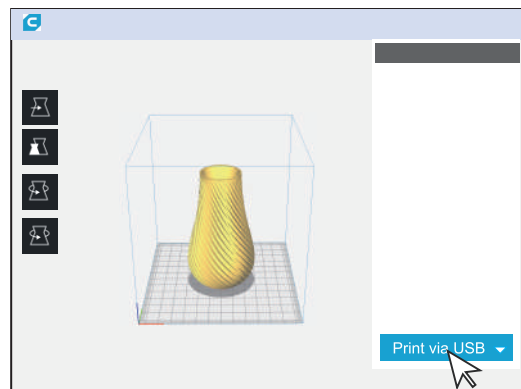
⚠ Note: Please make sure the machine has been properly linked to your PC, power it on before starting Cura. Your computer may need to install CH340 driver, please access to www.dobot.cc to download it.

📖 Description of key profile settings:

① Layer Height: For the height of each layer of printing, smaller value will produce finer surface, but cost more printing time. Suggested range is 0.05 to 0.3, not exceeding 3/4 of the diameter of the nozzle. Note that the printer used 0.4mm nozzle.

② Wall Thickness: For the printing thickness of the outer surface of the model, the setting of 1.2 indicates that the outer surface will go three rounds, since the width of each round equals to the diameter of the nozzle, namely 0.4.

③ Top/Bottom Thickness: Determine the bottom/top thickness of the model.

④ Infill Density: Determine the filling density of the internal grid of the model, generally set at 15% or less.

⑤ Printing Temperature: Need to be set according to filament type. Suggested value for PLA is 190~220℃, and for TPU is 210~230℃.

⑥ Build Plate Temperature: Need to be set according to filament type. Suggested value for PLA is 60~80℃.

⑦ Travel Speed: Travel speed should be set no greater than 40mm/s, otherwise the Z linear actuators may lose some steps when traveling downward from home position too fast and cause zero point deviation.

⑧ Support Placement: If the model has any hovering part, the option must be switched on. Generally, "Everywhere" indicates that support can be added on the model itself. If you select "Touching buildplate", it indicates that support can be added only between the print platform and the model hovering position, not on the model.

⑨ Build Plate Adhesion: "Brim" indicates that a few layers of outer ring should be added on the bottom edge of the model so as to prevent warping. And "Raft" is used to get the whole model raised by adding a raft-like base on the bottom when the heated bed leveling status is not satisfying.

⑩ Spiralize Outer Contour (i.e., vase mode): Only the outer surface and the bottom of the model are printed, and continuous spiral lift will appear when printing the outer surface, which can improve the surface quality, but has requirements for the model, and that is, the model can only have one outer surface and can not be hovered.

⚠ Note:

1. Hover the mouse over the option, and the corresponding hint will appear.
2. Right-click anywhere within the parameter setting area, you can "Configure setting visibility".
3. Tutorial video for using Cura is available on our official website.

DES-200

Material	PLA
Printer Setup	Recommended / Custom
Profile :	Fine 0.1mm ⭐

| Layer Height		0.12	mm
⧗ Shell			
Wall Thickness		1.2	mm
Top/Bottom Thickness		1.2	mm
▦ Infill			
Infill Density		20	%
Infill Pattern		Grid	
Gradual Infill Steps		0	
▥ Material			
Printing Temperature		205	℃
Build Plate Temperature		70	℃
Diameter		1.75	mm
Flow		100	%
Enable retraction		✓	
Retraction Distance		5	mm
Retraction Speed		50	mm/s
⏱ Speed			
Print Speed		40	mm/s
Infill Speed		40	mm/s
Wall Speed		15	mm/s
Travel speed		40	mm/s
❄ Cooling			
🛠 Support			
⚖ Build Plate Adhesion			
Build Plate Adhesion Type		Raft	
Raft Extra Margin		4	mm
Raft Air Gap		0.2	mm
Initial Layer Z Overlap		0.1	mm
Raft Top Layers		4	
Raft Print Speed		15	mm/s
⧗ Special Mode			
Print Sequence		All at Once	
Spiralize Outer Contour		☐	

3.5.4 Offline Printing

⚡ Warning: 1. After printing started, please make sure the first layer is in good bonding condition, and sort out the filament before leaving. Loose bonding may cause falling off of the model, and result in clogging of the print head. "Raft" build plate adhesion type is suggested for better bonding and easy removal of finished model.
2. After printing finished, please wait until heated bed cools down to ambient temperature. Place a knife or spatula under the print and apply a small amount of force to remove it. Do not try to drag or pull the print off, otherwise the heated bed sticker may swell and result in severe unevenness.

⚠️ Note: 1. The U disk or microSD card format shall be Fat32 with the capacity not greater than 32GB.
2. Make sure the machine has been properly leveled and zeroed before executing any Gcode files.
3. Applying gummed textured paper before printing can greatly reduce risk of getting the heated bed sticker scratched!

Operation steps:

1. Preheat nozzle and heated bed to target temperature, and test extrusion performance of the 3D print functional module. Refer to Section 3.3.
2. Follow the steps below to execute the Gcode file.
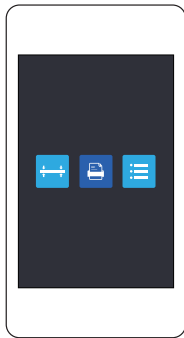
Press the "Entrance to file directory interface" button
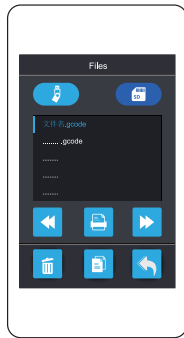
Switch to microSD card or U disk
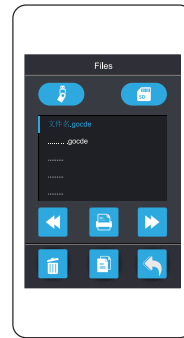
Press to select the file you want to print

Press the "File execution" button to start printing
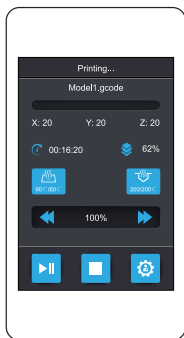
Wait for the heated bed and nozzle to be heated to the target temperature

Start printing automatically

1. **Speed Control**: Change printing speed in real-time. Note that too high speed may sacrifice accuracy and service life of the machine.

2. **Process Control—Pause/Continue**: Press to pause the printing process, press again to continue.

3. **Process Control—Abort**: Press to abort current printing process. The process will be unrecoverable once aborted, please be prudent.

Speed Control   Process Control—Pause/Continue   Process Control—Abort

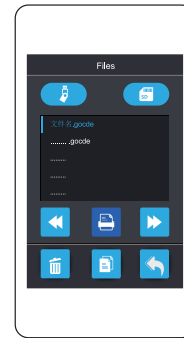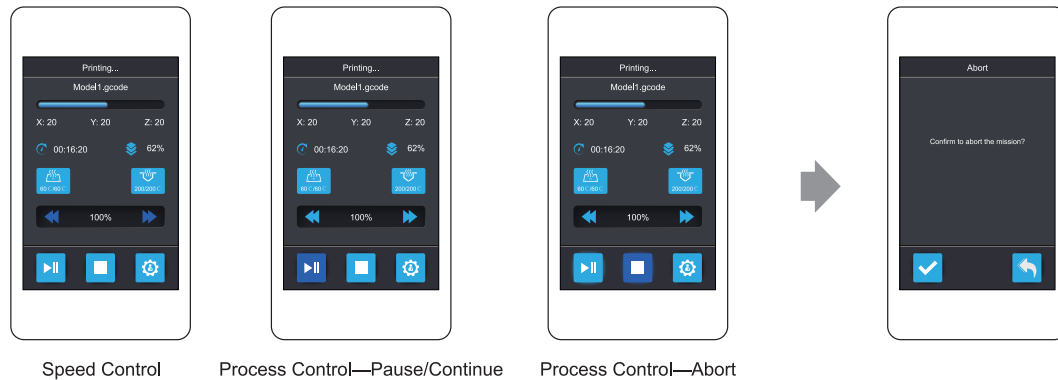4. **Change filament**: If the filament is about to runout or your desire to use another roll of filament to finish the print, please follow the steps below to change the filament. (Refer to Section 3.3 for correct filament installation and removal methods)

Press the "Other operations" button Press the "Change filament" button, and follow the prompts popped up on the touch pad to finish the operation Auto power-off
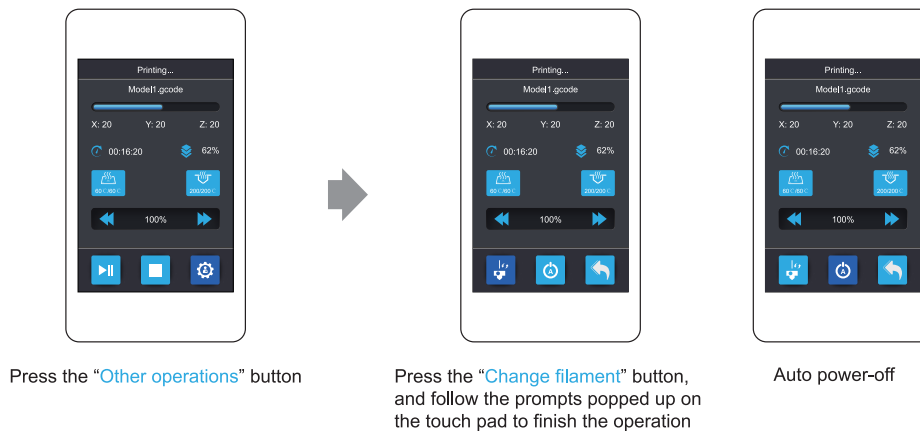
5. **Auto power-off**: The machine will power off automatically after finishing the current printing/engraving process, provided that the "Auto power-off " button is activated.

3.7 Power-Loss Resume

In case of abrupt power failure during printing, the machine will save current printing process and move the functional module away from the print. You may resume or cancle the process after power recovery.

Resume

Unfinished mission detected ! !
Confirm to continue/cancle/skip?
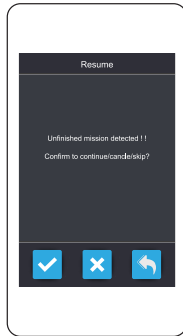
Description

" ✓ " Continue: Resume the unfinished printing process

" ✗ " Cancle: Cancle the unfinished printing process

" ↩ " Return: The system will prompt you again next time you turn on the machine, provided no file is executed after the power recovery.Your can use the "Return" button to check and prepare the machine, such as nozzle preheating and filament replacement.

3.8 Filament Runout Detection

The 3D print functional module is designed with build-in filament detection sensor.

1. The filament runout detection must be turned off to preheat the nozzle, and the preheating process will be interrupt if the filament runout detection is turned on during the process.
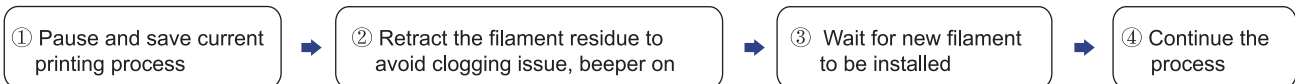
2. If the filament runs out during printing, state of the sensor will change from "runout detection turned off" to "runout detection turned on", and the filament runout detection function will work as follows:

① Pause and save current printing process → ② Retract the filament residue to avoid clogging issue, beeper on → ③ Wait for new filament to be installed → ④ Continue the process

3. The filament detection sensor module has adopted modular design. If you do not need the function, or if the sensor is not working, you can unplug the temperature sensor cable (white) from the module, remove the module connecting cable (black) from the PCB board on the bottom of plastic cap, and plug the temperature sensor to the PCB board directly. Refer to Section 5.4.

3.9 Notes for Printing with Soft Filament

1. Compared to PLA, soft filament like TPU requires higher printing temperature to reduce feeding resistance, recommended value for TPU is 210℃~230℃.

2. You must reduce extrusion force when printing with soft filament, replacing the spring or adjusting by using the rotary knob on the functional module can serve that purpose. Refer to Section 5.4. Different kinds of soft filament may vary in required extrusion force. Since extrusion force is proportional to the spring force, inadequate or intermittentoff feeding issue will occur if the spring force is set too small. On the other hand, if the spring force is set too big, the filament may curl inside the extruder under high feeding resistance condition. In that case, please refer to Section 5.4 for mantainance.
Recommended spring force adjustment for printing with TPU: Use the spare spring, and tighten the rotary knob.

4　Laser Engraving

No Touch

Warning :
Please wear protective glasses!
Avoid eye or skin exposure to direct radiation. Away from children!

Warning laser

⚡ Warning

Warning: Never touch. Away from children!

4.1 Fix the Workpiece and Replace the Functional Module

Operation steps: Stick a small piece of tape to the bottom of workpiece (traceless double-sided tape is recommended), keeping the edges of the workpiece aligned with grids and adhere it to the heated bed.

Workpiece

Heated bed
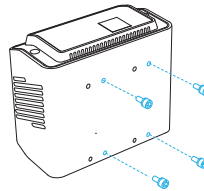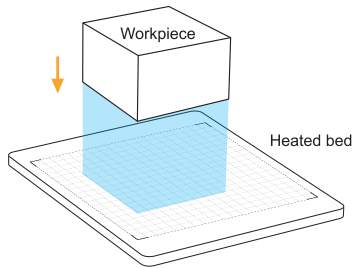
All functional modules of the printer must use the right set of thread holes for mounting
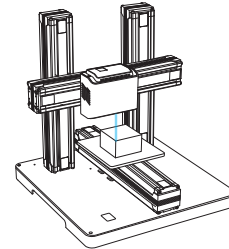
Wear the protective glasses to focus the laser and set zero point

4.2 Set the Zero Point

Operation Steps:
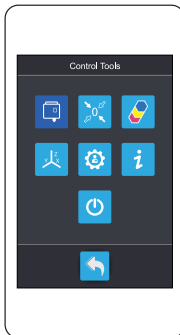
Press the "Entrance to functional module control interfaces" button
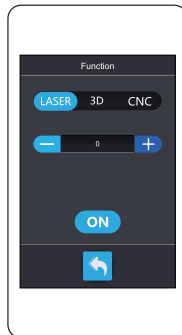
press "+" to make the laser output at intensity of 5, and press the "Return" button
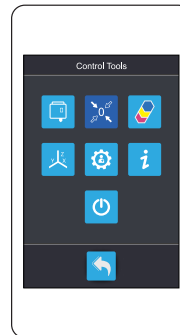
Press the "Entrance to zero point setting interface" button
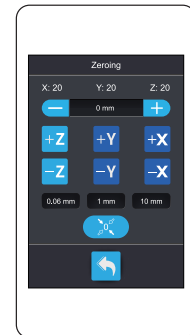
Control the X-axis and Y-axis to make the laser spot irradiated on the workpiece
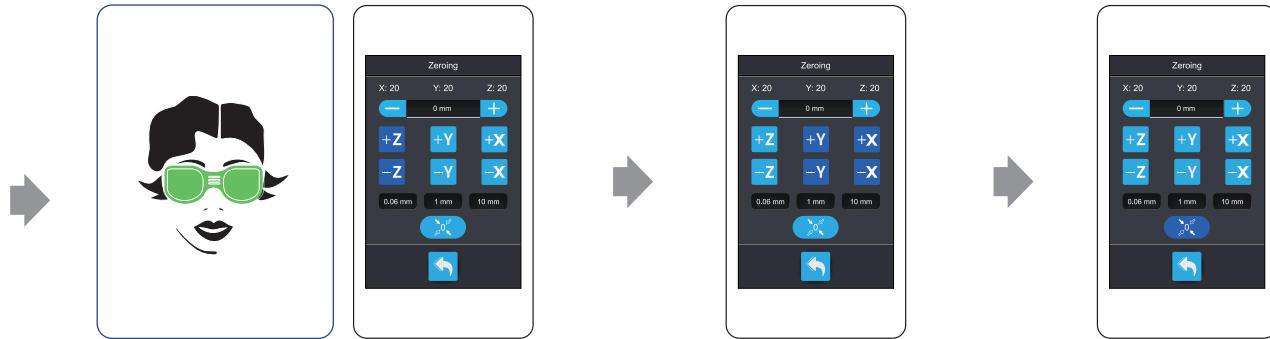
Wear the googles to control the Z-axis to focus the laser beam (until the spot is the minimum which should be judged by naked eyes). Switch the step distance to 1mm for fine tuning

Adjust the X-axis and Y-axis to move the laser spot to desired position, generally intersection at the lower left corner of the workpiece

Press the "Zero point updating" button to record the position of zero point. The machine will home again after successful recording

Warning: Make sure that the cables are plugged in place before power-on! Hot-plug will cause malfunction!

Note:
1. For the laser engraving function, the zeros of X, Y and Z axes shall all be set.
2. Zero point will not be lost after power-off, so there's no need to reset it. However, the zeros may be deviated and needs to be reset after the machine is reassembled or the functional module is switched.
3. If the position or size of the workpiece changes, it is necessary to refocus and set the zero point.
4. The laser unit is featured with focus length of 5~10mm, so it may not need to switch to 0.1mm step distance for focusing.

⚠ Note: Currently the software only supports offline working. Please visit www.dobot.cc to download the related tutorial videos and softwares.

Operation steps:

① Click "File" ➡ ② Select to import image ➡ ③ Click the "Laser" menu ➡ ④ Click to generate Gcodes ➡ ⑤ Click "File" ➡

⑥ Select to export Gcodes ➡ ⑦ Copy the Gcode file to U disk or microSD card ➡ ⑧ Select the file to engrave via the touch pad
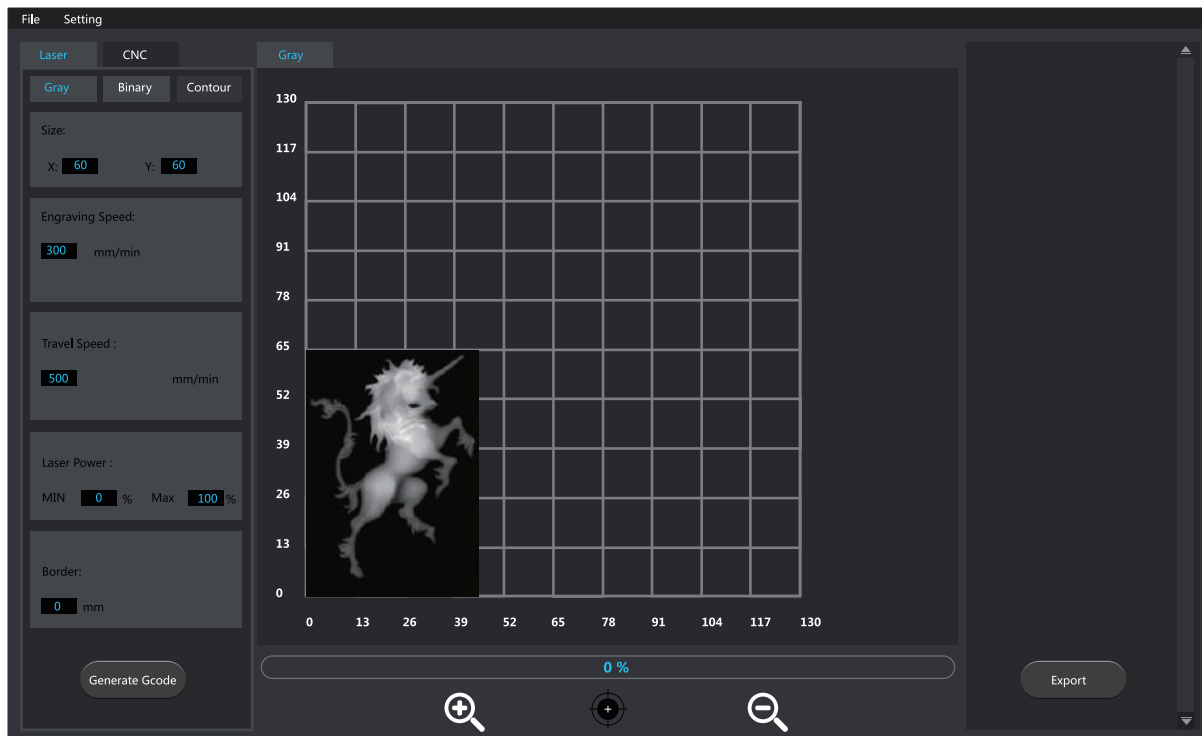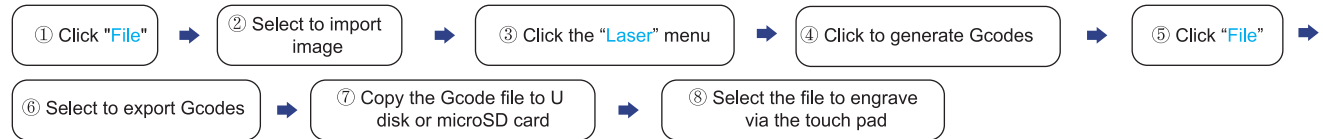
📖 Setting Description：

① Size: Adjust the size of the engraving pattern, use the zoom buttons for rough adjusting.

② Engraving Speed : Adjust according to the engraving effect of different materials, the materials that are more difficult to engrave require slower speed.

③ Border: Engrave the border of the pattern, default setting will not add border.

④ Snap to origin: Use the button on the bottom (between the zoom buttons) to align the image to origin.

⚠ Note: Free third-party software LaserWeb is supported, for detailed tutorials, please refer to https://bit.ly/2X640kg.

5 Troubleshooting

5.1 3D Printing Failure

Q : Print center is at left-bottom corner of the heated bed

A : Wrong machine setting in slicing software, the " Origin at center " box shall not be checked, refer to Section 3.5.2.

Q : Print center is about 15mm off heated bed center in X direction

A : Check whether the right set of mounting holes is used to install the print functional module. Refer to Section 4.1.

Q : The machine prints in the air after file execution

A : Check if the zero point is appropriate. Methods:
1. Check if coordinate of Z is in the range of 195~200 after homing operation.
2. Move Z coordinate to 0 manually and check the friction status with a piece of A4 paper.

Q : Poor first layer

A : 1. Check if the fixing screws of the platform is loose.
2. Re-level the heated bed.
3. Heated bed is too far from nozzle, result in loose bonding: Zero point is too high, reset or fine tune it. Refer to Section 3.2.
4. Heated bed is too close to nozzle, result in squeezing, scratching and extruder step losing issues: Zero point is too low, reset or fine tune it.

Q : The print falls off from the heated bed, melted filament flowing upwards and clogging around the nozzle

A : Please set the zero point correctly, increase heated bed temperature, and make sure the first layer is successful before leaving. Dealing method: Remove the bottom plastic cap, and heat the nozzle to make the cleaning easier. Refer to Section 5.4. Be careful of hot nozzle!

Q : Unable to read Gcode files in U disk or microSD card

A : 1. Check if the file system format of your U disk or microSD card is FAT32, and with capacity not greater than 32GB.
2. Check if the Gcode files are stored in the root directly.
3. Reboot the machine, unplug and plug the U disk or microSD.
4. Please use qualified U disk or microSD.

Q : Fail to finish the print

A : 1. Check if the filament is stuck by the filament roll support.
2. Check if the extruder can feed normally at standby state.
3. Reinstall the filament.
4. Open the Gcode file with text editor and check if there is any garbled codes at the end of the file.

5.2 Whole Machine Failure

Q : Unable to control X/Y/Z movements

A : 1. Check and make sure all cables are properly connected to the right sockets.
2. Check if green indicator light inside the functional module is on.
3. Connect the 3D print functional module and check if the nozzle temperature is normal, displaying "0" means unable to read nozzle temperature. In this case, please use the spare temperature sensor and apply the method described in Seciton 3.8-3 to decide if the failure is caused by faulty temperature sensor or filament runout detector. Refer to Section 5.4 for maintenance.

Q : Unable to exit filament runout detection interface

A : Use the spare temperature sensor and apply the method described in Section 3.8-3 to decide if the failure is caused by faulty temperature sensor or filament runout detector. Refer to Section 5.4 for maintenance.

Q : Movement of X/Y/Z linear actuator is abnormal

A : 1. Check and make sure the cables are in good connection.
2. Check crossly(i.e. connect X-axis linear actuator to Y port and Connect Y-axis linear actuator to X port and Connect) to decide if the failure is caused by the faulty linear actuator or control board.

Q : Unable to exit "starting..." interface after power up

A : 1. Unplug the cables, U disk and microSD card orderly, restart the machine to decide if the failure is caused by corresponding faulty component.
2. Update the mainboard firmware.
3. Check if green indicator light inside the functional module is on. Update the touch pad firmware if so.

Q : Unable to start the machine, auto shutdown or restart

A : 1. Unplug the cables, U disk and microSD card orderly, restart the machine to decide if the failure is caused by corresponding faulty component.
2. If the issue is solved after unpluging the 3D print functional module, then the failure may caused by faulty PCB board inside the functional module.

Q : Auto shutdown after pressing nozzle heating button

A : 1. Unplug the cables, U disk and microSD card orderly, restart the machine to decide if the failure is caused by corresponding faulty component.
2. If the issue is solved after unpluging the 3D print functional module, please check if failure is caused by short-circuit of heating rod cables. Refer to Section 5.4 for maintenance.

Q : Buzzer on after starting, the machine shutdown a few seconds later automatically

A : Check if the 3D print functional module and heated bed are reversely connected.

5.3 3D Print Functional Module

Q : Able to heat nozzle, but unable to reach target temperature

A : Check if the temperature sensor falls out of the heating block. Refer to Section 5.4.

Q : Abnormal nozzle temperature, displays "0" other than ambient temperature

A : 1. Check if temperature sensor cable and filament runout detection cable are connecting to the correct socket properly. Refer to Section 5.4.
2. Use the spare temperature sensor and apply the method described in Section 3.8-3 to decide if the failure is caused by faulty temperature sensor or filament runout detector. Refer to Section 5.4 for maintenance.

Q : Unable to preheat the nozzle

A : 1. Check if nozzle temperature displays normally.
2. Check if red indicator light inside the functional module is on/flashing.
3. Check if the heating rod cable is connecting to the correct socket properly. Refer to Section 5.4.
4. Heating rod is damaged.

Q : Unable to extrude filament normally

A : 1. Heat nozzle to about 250℃, try extrude several times first, then press down square push block and pull outthe filament. Remove the bulged end and install it back.
2. Refer to Section 5.4 for maintenance if the method 1 failed.

Q : The 3D print functional module produces deep loud abnormal noise

A : The extruder cooling fan blades are damaged.

Q : Under extrusion, too little filament is extruded during printing

A : Carbonized material will accumulate in the nozzle after long time printing. To keep the print head in good condition, we suggest you clean the nozzle after every 1kg filament printing by applying the cold-pull method: Heat nozzle to 200℃, extrude until melted filament flows out. Stop heating and wait until nozzle temperature drops to 90~100℃, then press down the square push block fully and pull out the filament, in this way, the carbonized material may be pulled out together. You may need to perform the cold-pull 4~5 times to get the nozzle fully cleaned.Method to identify if the under extrusion issue is fixed: After each cold-pull, remove the bulged end and reinstall the filament, pinch the filament near the inlet with your finger and extrude continuously to feel if the feeding resistance is reduced.

5.4 Maintenance of 3D Print Functional Module

5.4.1 Disassembly of 3D Print Functional Module

Remove the fixing screws ① of upper plastic cap ②. Screw off the rotary knob ⑩ and take down the spring ⑨. Take out the filament runout detection module ⑯. No need to unplug any cables for now.

Diagnose extruder feeding issue:
Turn on the machine to test the extruder. Use external light source to check if the gear ㉓ can turn normally, or if it is slipping. Check if there is filament residue inside the extruder and result in blockage. Try to remove the filament residue or extrude it out after heating nozzle to target temperature. No need to disassemble any further if the issue is solved.

Remove the fixing screws ⑮ of bottom plastic cap ㉗. Unplug the blower cooling fan ⑭, push downwards to remove the fan ⑭ together with the cap ㉗.

Unplug all the cables, remove the upper plastic cap ② and filament runout detection module ⑯.

⚠️ **Warning:** Be careful with the temperature sensor cable ⑥ and filament runnout detection cable ④, do not drag the thin cable directly for removal to prevent breakage.

Remove the fixing screws ⑫ of extruder mounting plate ⑪.

Push the square block ⑧ to the innermost, and pull upwards to separate the extruder assembly (⑦ ⑪) and shell ⑬.

Remove the fixing screws ㉑ of extruder cooling fan ㉒, take down the fan ㉒ and washers ⑱.

Solve the extruder feeding issue:
Clean up the filament residue and tighten the gear jack screw (Apply metal glue if available). Do not change the position of the gear, and make sure the jack screw is on the motor side. For replacing the hot-end suite or temperature senor, please continue the disassembling:

Loosen the fixing screw ㉖, and remove the heating rod & temperature sensor suite ㉔.

Do not do this except for replacing hot-end suit: Remove the hot-end suite ㉕ with a wrench or plier by turning anti-clockwisely.

⚠️ **Note:** You may need to heat the hot-end suite to make the operation easier, in case of stuck by concretionary filament.

① Upper plastic cap fixing screw
② Upper plastic cap
③ PCB board
④ Filament runout detection cable
⑤ Heating rod cable
⑥ Temperature sensor cable
⑦ Extruder
⑧ Squre push block
⑨ Extruder spring
⑩ Rotary knob
⑪ Extruder mounting plate
⑫ Fixing screw
⑬ Shell
⑭ Blower cooling fan
⑮ Bottom plastic cap fixing screw
⑯ Filament runout detection module
⑰ Extruder motor cable
⑱ Fan washer
⑲ Extruder cooling fan cable
⑳ Thermal insulation EVA
㉑ Extruder cooling fan fixing screw
㉒ Extruder cooling fan
㉓ Gear
㉔ Heating rod & temperature sensor suite
㉕ Hot-end suite (Brass nozzle -Aluminum heating block-Steel filament barrel)
㉖ Heating rod fixing scew
㉗ Bottom plastic cap
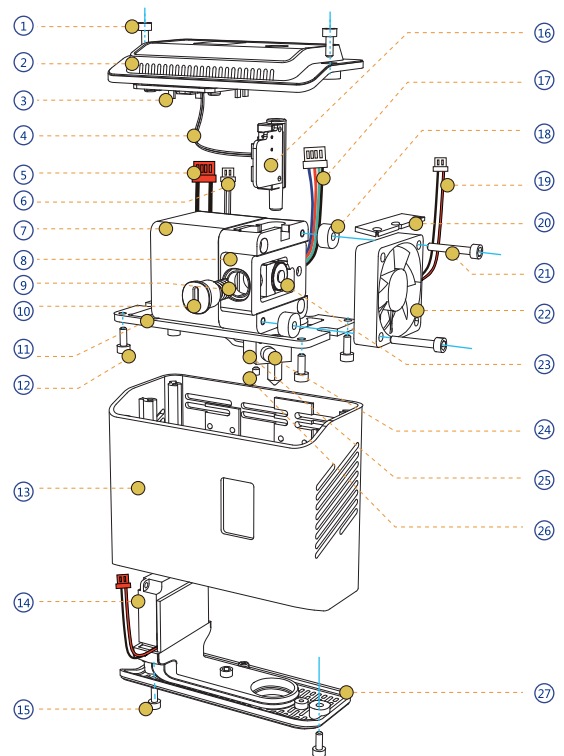
5.4.2 Assembly of 3D Print Functional Module

📖 Description: Please visit www.dobot.cc to download the related tutorial videos.

Apply 704 silicone adhesive on outer thread of the nozzle evenly.Then screw the brass nozzle on the heating block, tighten it. Make sure the nozzle is on the side where the jack screw ㉖ is installed.

Put a sealing gasket (accessory part shipped along with the machine) inside the nozzle mounting hole, and keep it lay flat.

⚠️ Note: The sealing gasket is disposal, please clean up the old one before assembling. Both 704 silicone adhesive and gasket were applied for nozzle sealing during factory assembing. You must apply at least one of them when asembling new hot-end suite.
Dot not heat the nozzle until the silicone adhesive is solidified (Generally takes about 6 hours).

Apply 704 silicone adhesive on outer thread of the filament barrel evenly. Tighten the filament barrel on the other side of the heating block, pay attention not to loose the nozzle during the operation.

Install the hot-end suite on the extruder ⑦ , tighten it with a wrench or plier by clamping the nozzle.

⚡ Warning: Please clamp the nozzle to tighten hot-end suite, otherwise you may loose the nozzle and result in leakage. Control tightening force to prevent breaking the filament barrel.

Choose the better side to insert the heating rod & temperature sensor suite ㉔, straighten out the cables and tighten the fixing screw ㉖ .

Place the square push block ⑧ in the right direction.

Fix the extruder cooling fan㉒ with washers ⑱ and screws ㉑.
Note that the fan cable and extruder motor cable should be on the same side.

Straighten out the cables and put the extruder assembly (⑦⑪) into the shell ⑬.

Install the spring ⑨ and rotary knob ⑩.

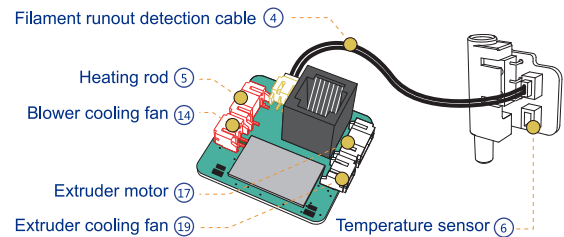Fix the upper plastic cap ② with screws ①.

⚡ Warning: Pay attention to positions of the cables to prevent squeezing, especially the blower cooling fan cable ⑭.

Straighten out the cables and fit the upper plastic cap ② .

Connect the cables correctly.

Filament runout detection cable ④
Heating rod ⑤
Blower cooling fan ⑭
Extruder motor ⑰
Extruder cooling fan ⑲
Temperature sensor ⑥

Paste the thermal insulation EVA ⑳.

Place the filament runout detection module ⑯ into the extruder.

Straighten out the cables and install the bottom plastic cap and blower cooling fan assembly ⑭ with screws ⑮ .

Fix the extruder mounting plate ⑪ on the shell ⑬ with screws ⑫.

Parameters

Overall Dimensions: 355 * 355 * 390mm

Adapter Input: 100-240V~50/60Hz, 2.0A Max.

Adapter Output: 12V~10A

Main Material: Aircraft-grade aluminum

Operation Panel: 3.5' LCD touch pad

3D Printing	
	Nozzle Diameter: 0.4mm
	Layer Resolution: 0.05~0.3mm
	Nozzle Temperature: 250℃ Max.
	Heated bed Temperature: 75℃ Max. (at 25℃ ambient temperature)
	Forming Size: X200 * Y200 * Z195mm
	Applicable Materials: 1.75mm PLA, Flexible TPE, TPU, NYLON
	Printing Speed: 10~80mm/s
	Operating Temperature: 10~35℃

Laser Engraving	
	Working Range: X200 * Y200mm
	Laser Power: 0.5W (standard) / 1.6W (optional)
	Laser Service Life: 4000H (non-continuous using).
	Supported Materials: Wood, paper products, some plastics, leather, etc.